

A Blueprint for Nuclear Innovation and Competitiveness

The United States must develop a regulatory environment conducive to innovation and advancement in the nuclear industry. Regulations must be updated to encourage growth and investment to propel the United States into the nuclear future.

Fuel

Establish a national security objective to wean the United States nuclear industry off Russian imports of the uranium necessary for commercial and advanced reactor fuel. This requires a “Made in America” system for the front end of the nuclear fuel cycle: mining, conversion, enrichment, and fabrication.

Establish a Secure Fuel Supply

The issue plaguing the United States is not a lack of resources but lack of access to its resources due to bureaucratic regulatory barriers and outdated anti-mining policies.

- Take action to strengthen uranium mining and conversion industries.
- Enable private sector solutions by reducing regulatory restrictions to mining, particularly on federal land.
- Identify actions to end reliance on Russian-sourced, low-enriched uranium and incentivize investment in domestic infrastructure.

Advanced Reactor Fuel

Establish an advanced fuel supply to provide more enriched fuel required for advanced reactors.

- *HALEU—High Assay, Low Enriched Uranium*: Fuel supply and regulatory infrastructure does not exist for HALEU in the United States. HALEU fuel supply is essential for advanced reactors. The Department of Energy (DOE) should implement provisions of the Energy Act of 2020 to establish a program to develop a commercial market for HALEU.
- *Uranium 233*: Necessary fuel seed for thorium reactors. Preserve existing supply and consider creating additional domestic supply.
- *Address the Nuclear Regulatory Commission’s (NRC) Role in Fuel Qualification for Advanced Reactors*: Congress should conduct oversight of NRC approval of fuel qualifications and consider measures to assure NRC adheres to timely, efficient decisions.

Licensing and NRC Modernization

The NRC’s work to assure adequate safety of nuclear technology is central to nuclear expansion. The NRC is a cost-reimbursement agency. When proposals or licensing actions are before the NRC, the licensee is billed by the NRC. There is no time limit on NRC reviews. Ongoing questions about the management of NRC reviews render the process prone to large, hard-to-predict costs for applicants. The high-cost stifles innovation and nuclear

development. The NRC needs durable and predictable regulations and efficient execution, consistent with its principles of good regulation. The licensing structure at the NRC must be reformed to create an environment of certainty and predictability to incentivize advanced reactor development as well as keep the existing fleet of reactors online.

- *Assure durable, predictable Commission decisions making.* In March 2022, the NRC voted to reverse a prior position on the applicability of the license renewal general environmental impact study (GEIS) beyond the initial 20-year license renewal. Since this was part of an adjudicatory hearing, utilities with current Subsequent License Renewal (SLR) applications were put on hold. The idea that established decisions could be reversed when Commission Membership changes is troubling to investors and the industry. The NRC should not be a politicized body. Oversight is necessary to assure the Commission understands its mission for durable, predictable decision-making.
- *Expedite Environmental Reviews:* According to industry data, the cost of the environmental review process has tripled over the last ten years, and completion of the process averages about four years. The NRC should be directed to set specific review timelines and incorporate previously performed environmental reviews when available.
 - *H.R. 1559, the Modernize Nuclear Reactor Environmental Reviews Act (Sponsor: Rep. Jeff Duncan),* seeks to update the environmental review process for nuclear reactors, especially advanced reactors. The bill directs the NRC to evaluate the current environmental review process for reactors and identify areas where there are reasonable options for less burdensome assessments under the National Environmental Policy Act (NEPA) process. The bill would then require the NRC to conduct a rulemaking to implement these more efficient licensing options. Specifically, H.R. 1559 would expand the use of categorical exclusions, environmental assessments, and generic impact statements in lieu of environmental impact statements as required by NEPA.
- *Advanced Reactor Licensing:* Operation of advanced reactors is different from commercial ones; the NRC regulatory process should reflect this. Update processes at the NRC to better equip the commission to license advanced reactor technologies.
 - *Expedite Fuel Qualifications:* No new reactors can be licensed or allowed to operate until their fuel is qualified by the NRC. NRC must set a time and cost limit on fuel qualification approval.
- *Pre-Licensing Period with NRC:* Prior to the start of billing time, a time period should be established to allow the licensee to educate the NRC on their technologies. This is especially prudent for new technologies.
- *Maintain NRC's Global Safety "Gold-Standard":* The NRC plays a critical role in ensuring the industry upholds the world's highest safety standards. To maintain its status as the gold standard for nuclear regulation, NRC should focus on a program of constant improvement to assure efficient, timely oversight and regulatory decisions

to protect public health and safety, promote the common defense and security, and protect the environment. Modernizing certain environmental regulations does not mean compromising this mission.

Financing

Ensure tax and financial policies do not discourage nuclear investment and development.

- *Calibrate Electricity Markets:* Markets must be structured correctly to compensate the generators of nuclear energy appropriately for the quality and reliability of power produced.
- *Nuclear as a Renewable:* Consider amending various parts of U.S. code to redefine nuclear equivalent to a renewable energy resource for regulatory purposes, when applicable.
 - Example: Energy Policy Act of 2005, 7.5% of electricity is required to come from renewable resources. Include nuclear sources.
- *Support Competitive Export Financing:* Most of the world's nuclear construction occurs outside the United States. Congress must provide for long-term authorization for the necessary financial agencies to ensure financing is competitive with rival supplier nations.

Spent Nuclear Fuel

Develop a long-term fuel management program that includes a permanent repository and recycling/reprocessing.

- *Permanent Geological Repository:* Decades of study have proven Yucca Mountain in Nevada is a geologically safe place to store and permanently dispose of nuclear waste. While it has local support from a majority of counties within NV, the State and Congressional Delegation level of support has been lacking and has worked to undermine the application of the law. Congress and DOE should seek to complete the licensing process, which will provide the public and politicians full and authoritative information to answer remaining questions on this major infrastructure project. Congress and DOE should seek to identify potential compromises and long-term benefits that include fresh approaches to negotiate a pathway to make Yucca Mountain acceptable to Nevada stakeholders and a reality for the national interest.
- *Recycling/Reprocessing:* Technologies exist to enable Spent Nuclear Fuel to be utilized again in advanced reactors. DOE must work to advance these technologies, so they are commercially and economically viable. DOE should prioritize exploring innovative technologies to make recycling a reality. Loan Program Office (LPO) financing should be allowed for spent fuel recycling.